

italmatch.com

Dequest® SPE Antiscalants for membrane applications

Introducing Italmatch Chemicals

Leading innovative chemicals group, majoring performance additives and specialty solutions to satisfy the most demanding applications in the Lubricant, Plastics, Water, Oil & Gas and Mining markets.

 **Founded in Italy - Active throughout the world**



Sustainability and regulatory compliance

We are passionately committed to helping our customers meet today's (and tomorrow's) increasingly demanding sustainability targets and regulatory requirements, especially by conserving water, minimising waste and promoting energy efficiency.

Why partner with us?



Fresh synergies



Dedicated R&D and
Technical Support teams



Innovative solutions



Worldwide production facilities



MENA & APAC

SHANGHAI ■
CHANGZHOU ■ ■ ■
FANGCHENG ■
NANTONG ■
China

TOKYO ■
OSAKA ■
Japan

SINGAPORE ■ ■
Singapore

Italmatch in numbers

4

Resilient markets - We are a leading global player in each

€850m

Annual pro forma sales

1200+

Employees

19

Manufacturing sites around the world

7

State-of-the-art R&D sites driving innovation

20%

Of our products have been developed in the last 5 years

100

Patents granted with 30 patent families

100

Strong research, development and technical support team

Desalination is a sustainable answer to the problems of limited access to fresh water

More than 40 years ago, Dequest® pioneered the development of phosphonates and Dequest® phosphonates have ever since been the chemistry of choice for antiscalants for membrane desalination applications.



Through our R&D, continuous improvement and practical experiences, Italmatch Advanced Water Solutions has developed a full range of ready-to-use RO antiscalants, cleaners, biocides and associated services for the desalination markets.

Our ready-to-use products for RO are based on DEQUEST® water additives and cover the complete spectrum of functionalities required to control the formation of most of the scales on membranes effectively.

Our ready-to-use RO antiscalants and cleaners range carries approval from major membrane manufacturers.



Products

DEQUEST® RO Antiscalants, membrane cleaners and biocides can be used in a wide range of applications, such as:

- Acid Mine Drainage
- Leach Solution Recycling
- Metal Recovery
- Minimal and Zero Liquid Discharge (MLD/ZLD)
- Drinking Water production

All DEQUEST® SPE products for RO are certified to ANSI/NSF standard 60 for the production of potable water.

Benefits of DEQUEST® RO antiscalants:

- Effectively prevent scale even under the harshest conditions
- Reduce operational costs by:
 - Maximize system recovery
 - Increase energy efficiency
 - Less downtime by avoiding of extending the period between cleanings
- Recycle and/or limit discharge to meet environmental requirements
- NSF Standard 60 approval for drinking water applications
- Approved by the major membrane manufacturers

Membrane Antiscalant	Product Performance							
	CaCO ₃	CaSO ₄	BaSO ₄	CaPO ₄	CaF ₂	SrSO ₄	SILICA	METAL OXIDES
SPE 0001	Excellent	Good	Excellent	Good	Excellent	Good	Excellent	Good
SPE 0106	Excellent	Excellent	Good	Good	Excellent	Good	Excellent	Good
SPE 0108	Good	Good	Excellent	Excellent	Good	Excellent	Excellent	Good
SPE 0109	Good	Good	Excellent	Excellent	Good	Excellent	Excellent	Excellent
SPE 0111	Excellent	Good	Good	Good	Excellent	Good	Good	Good
SPE 0133	Good	Excellent	Excellent	Good	Excellent	Good	Good	Excellent
SPE 0134	Excellent	Good	Excellent	Good	Excellent	Good	Excellent	Excellent



Packaging

DEQUEST® ready-to-use products for reverse osmosis are available in a wide range of packaging types. For details please refer to product fact sheet.

Product effect

Excellent

Good

Membrane cleaner and disinfectant	Product Performance						
Product	CaCO_3	CaSO_4	CaPO_4	SILICA	METAL OXIDES	ORGANICS	CLAYS
SPE 0560	Excellent	Good	Excellent	Good	Excellent	Good	Good
SPE 0561	Good	Excellent	Good	Excellent	Good	Excellent	Excellent
SPE 2127	Good	Good	Good	Excellent	Good	Excellent	Excellent
SPE 2128	Good	Excellent	Good	Good	Good	Good	Good
SPE 2129	Excellent	Good	Excellent	Good	Excellent	Good	Good
SPE 0530	Good	Good	Good	Good	Good	Excellent	Good
SPE 0538	Good	Good	Good	Good	Good	Excellent	Good

Services and support

We are continuously improving our range of products and the associated web-based OASYS software in order to serve new requirements in the desalination market.

Production selection and dose rate calculation software

The OASYS web-based software was specifically designed to assist operators and designers of membrane systems in the selection and optimization of the most appropriate antiscalant for any system.

OASYS main features:

1. Calculate of the brine salt solubility
2. Recommend the most appropriate antiscalant and optimum dose rate
3. Allows for immediate optimization by modifying the recovery rate or pre-treatment acid injection
4. Detailed reporting
5. Full private label integration

Product performance characterisation and scale inhibitor comparative testing: based on synthetic water we are able to create all kinds of scaling potentials. With this capability we can then evaluate and compare on the same basis specific scale inhibitor performance.

Membrane compatibility testing: flat sheet and bench RO units (for 4" and 8" membranes) are available for membrane compatibility testing according to specific manufacturer's guidelines.

Cleaning test and development of cleaning procedure both on flat sheet and on 8" or 4" membranes test rig. Based on site evaluations (analysis results, autopsy conclusions, system trouble shooting) we can provide you with the optimal cleaning procedure. On request we can also assist you through on-site expert field cleaning services.

The OASYS software quantifies scaling tendencies for a wide variety of scale:

- Calcium carbonate (LSI-S&DI)
- Calcium phosphate
- Calcium sulphate
- Calcium fluoride
- Silica
- Barium sulphate
- Strontium sulphate
- Metal hydroxide



Membrane autopsies

Membrane autopsies are useful to identify the root causes of reduced operational performance. The results help us to identify the type of fouling, scaling and damage to the membrane. It allows us to make detailed technical recommendations in order to improve operational performance of an RO system.

A full **Italmatch** autopsy includes a wide range of activities or tests, as described below.

- Selection of the most representative element(s)
- External/Internal visual examination
- Chemical identification of surface foulants using:
 - FTIR spectrometer
 - Scanning electron microscope (SEM) equipped with Energy Dispersive X-Ray Spectrometer (EDX)
 - Microscopic examination with on-board camera
 - P-NMR for specific phosphate or phosphonate fouling identification
- Loss on ignition test
- Microbiological examination
- Fujiwara Test

An autopsy report is produced and contains relevant pictures of membranes and deposits to aid better understanding. Our philosophy is to recommend corrective steps to resolve the operational performance issues.



Private labelling

Italmatch offers its customer the required support for private labelling for its full range of antiscalants, membrane cleaners and biocides. Our service includes:

- Fully customizable product and dose rate selection software
- Bespoke procedure to get private labelled products NSF/ANSI Standard 60 approved for drinking water applications
- Support to obtain approvals from the major membrane manufacturers
- Technical support by Italmatch global or regional service centres
- Local manufacturing of private label grades
- Complete SAP order process integration

Technical Recommendations

For specialised technical support, additional information on any of our products, or if you have a technical problem you would like to discuss with one of our experts, please contact your sales representative.

Start-up and commissioning

Italmatch experts can be present and assist you in defining: product dosage (dilution, injection system design & injection point), start-up and shutdown chemical treatment procedure, elaboration of data collection and reporting protocol for product performance follow-up and parameter adjustment, on-the-job training of operators and operating manual development.

System trouble shooting

When plant installations are requiring frequent cleaning or are having performance issues, we can perform on-site inspections. We assist in collecting relevant data and determine ways of achieving design performance.

Training

Italmatch is committed to optimize production cost by the training of plant operators regarding membrane fundamentals, system pre-treatment, operation and monitoring.



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More information

If you would like to obtain more detailed information about our products or are interested in obtaining a sample for evaluation in your system, please contact your nearest Italmatch Chemicals S.p.A. representative or visit our website aws.italmatch.com



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